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The Quality of Florida Grapefruit

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The Florida Grapefruit Situation

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VOL. 41 — NO. 6 JUNE, 1960 BARTOW, FLORIDA

Florida Citrus Growers

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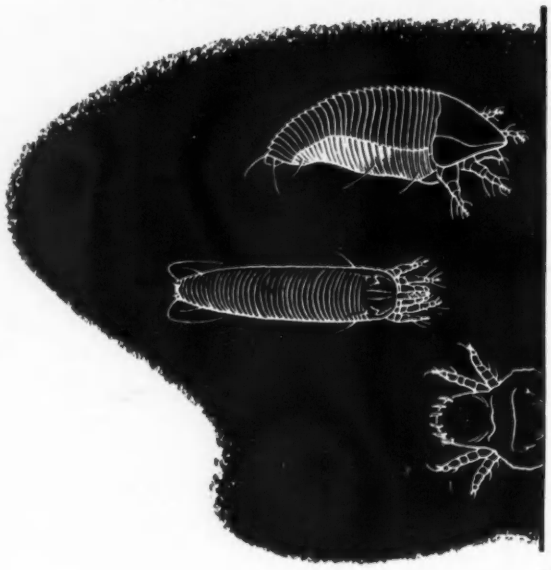

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Report Of Progress

Of the Florida Citrus Research Foundation, by Al Whitmore, its President, to the Growers Attending the Gulf Citrus Growers Institute at Dade City, Florida, April 29, 1960

DR. DONALD F. SCHEER

was recently appointed Horticulturist on the staff of the U. S. Horticultural Field Station, Orlando, Florida. His specialty is citrus breeding, and he will work with Dr. Philip C. Reece in the Citrus Breeding and Variety Improvement Project. His principal concern will be that of breeding new rootstocks. Dr. Scheer recently obtained his Ph.D in plant breeding from Rutgers University and has had several years' experience in breeding with the Burpee Seed Company.

It pleased me very much to have the growers of the Planning Committee of this Institute request that I make a report on the progress being made on the plans that were laid that caused the formation of the Florida Citrus Research Foundation. The very fact that the Planning Committee requested this report indicates again the great interest among citrus growers in the opportunity that the plans for the Foundation afford our economic future, because citrus lags far behind all other crops in the development of new varieties that can improve our market.

It is only through a process of growing citrus trees to maturity that researchers can prove that the varieties they are developing will meet the rigid requirements of our industry, and in the process will be shown the cold-hardiness, drought resistance, immunity or tolerance to diseases, and the ability to put on quality fruit in satisfactory quantities. These are among the reasons for the purchase of 500 acres of land for the researchers to use.

In the year since the land was located, which the Foundation has purchased subject to a mortgage of $77,000, a contract with the U. S. Department of Agriculture has been agreed upon, signed, and recorded in the Public Records of Lake County, furnishing this land to the U. S. Citrus Station in Orlando for ninety years. The County Commissioners of Lake County have agreed to put necessary roads and bridges on the property to make it easily accessible for citrus growers to visit, and for the research men to do the necessary work.

The U.S.D.A. has employed Ed Stanwood as the superintendent to carry out the operation on the project. Mr. Stanwood has prepared over 100 acres for the planting of material that will be furnished from the greenhouses in Orlando. He invites you to visit the property and see the progress that has been made. The U.S.D.A. has also hired Dr. Don Scheer to cooperate with Dr. Philip Reece in a stepped-up breeding program that the use of his land affords.

I believe that the progress to date has been good. However, our responsibility has not been fulfilled, because at the time we agreed to make this land available to the Department, we offered to make permanent improvements.

Among these improvements are a fence to protect the valuable plantings that are being made; wells and irrigation equipment that will be needed; buildings to house the caretaker, equipment and records; drainage canal and dikes in the low land so it can be used in testing root stocks and trees in conditions which would be similar to much of the land that is being planted where high water tables and soil conditions have heretofore not been considered suitable for citrus. There will be lift pumps needed to move water quickly.

It has been estimated that these things I have just mentioned will cost about $50,000. Any organization or person making a contribution of any one of these items in lieu of money would be helpful, and is solicited. Such gifts, like cash or contributions of fruit, are tax-deductible.

EDWARD T. STANWOOD

was recently appointed as Superintendent of the new Foundation Farms near Leesburg which is operated by the U. S. Horticultural Station, Orlando, Florida. Mr. Stanwood's principal job is that of developing the Foundation Farms into a site for testing the adaptability of the thousands of new citrus hybrids being developed by Drs. Philip C. Reece and Donald F. Scheeer of the U. S. Horticultural Station. Mr. Stanwood comes to the USDA from the International Cooperation Administration where he has worked with many tropical crops including citrus in Central America for the past 20 years. During the past 5 years he was Director In Charge of the I.C.A. Agricultural Experiment Station in Nicaragua. Mr. Stanwood plans to make his home in Clearmont, Florida, where he will be in convenient range of the U. S. Horticultural Station at Orlando and the Foundation Farms near Leesburg.

The one great reason that makes me believe that the citrus growers and the allied industries are interested in this propect is that, dur-

(Continued on page 12)

USE THE PRODUCT PROVEN BEST FOR

Photograps Courtesy of Florida Citrus Commission

MICRONIZED TRI-BASIC COPPER

Florida Citrus Experiment Station Research has proven that copper is the best material for control and prevention of Greasy Spot–

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Representative of every interest
Representing no special interest

Publication office at Bartow, Florida. Entered as second class matter February 16, 1920, at the post office at Tampa, Florida, under act of March 3, 1879. Entered as second class matter June 19, 1933, at the post office at Bartow, Florida, under act of March 3, 1879.

Florida Citrus Looks To Next Decade

By HOMER E. HOOKS
General Manager,
Florida Citrus Commission

15th Gulf Coast
Citrus Growers Institute
Dade City, Florida
April 29, 1960

I feel humbly honored that you have invited me to return for what I believe is my third appearance at this splendid annual meeting of citrus growers, production managers, scientists, county agents, fruit dealers and many others here in Dade City. There are few citrus meetings which so consistently provide a full day's menu of rich but digestible servings, with a minimum of fat and dressing. I sincerely hope that my remarks will be such that you can chew on them a while and then swallow them, without any disagreeable after-effects.

Certainly, this matter of looking into the 1960's for Florida citrus is a tremendous one — one that concerns every one of us. For citrus, the 1960's offer what sometimes seem overwhelming problems, but at the same time wonderful opportunities. Somebody said, "Don't belittle your future. Remember, you're going to spend the rest of your life there."

And so I do not shirk this opportunity, nor any opportunity, to discuss frankly and candidly with my friends in the industry what I feel are some of the problems we are going to face, and some of the opportunities we are going to have to do a better job to sell more citrus.

This today is in the nature of a stockholders report, because each of you is intimately concerned with the operations of the Commission, and as growers who pay the five cents or six cents a box assessment, you are entitled to know how your money is being spent. And you are entitled to know and share with us our thoughts and plans for the future.

It is especially appropriate to consider Commission operations now, because 1960 is the 25th anniversary of the Florida Citrus Commission. It was in the Spring of 1935 — almost exactly 25 years ago now — that a group of citrus growers went to Tallahassee and asked the Legislature to create this agency so that the industry could manage its own affairs, run its own advertising and merchandising program, and later to carry on research for new products (one of which turned out to be frozen orange concentrate), improve packaging, set quality standards, and do many other things to promote the general welfare of the industry — and all to be paid for by the industry itself. It was a revolutionary idea in agriculture, and I think you will agree that the record of these 25 years indicates the idea has worked.

This quarter of a century has seen a drastic change in the marketing of our crop. In 1935 we produced 15,900,000 boxes of oranges, 98% of which were shipped fresh. This season we are producing 93,000,000 boxes of oranges, of which about 80% will be processed.

This change-over from a predominantly fresh-fruit industry to a predominantly processing industry has caused some chafing and grinding of gears, of course. But the important thing is to see that the primary producer of the fruit has a profitable market, in one outlet or another. It is very definitely in the growers' interest to keep this fresh fruit channel alive and healthy. Whenever the grower loses even one outlet for his fruit, his opportunities for a good return are reduced. The Commission saw this fresh fruit problem building up a little more than a year ago and took immediate steps to do something about it. You recall the discouraging fresh fruit picture last season. We had the smallest orange movement in 23 years; for the first time in history, we shipped more fresh grapefruit than oranges.

The Commission called packing house managers and sales managers together in special meetings and focused industry attention on the situation. Improved shipping sizes were recommended and adopted, certified containers were revised, the minimum ratio was increased half a point, laboratory work on decay controls was intensified and the results published, a permanent industry advisory committee on fresh fruit was appointed, and now a full-fledged trade association of fresh fruit shippers is taking shape.

And this emphasis continues to this very day. Following a meeting of shippers on Wednesday, we are putting on an aggressive sales promotion campaign on Valencias throughout May. The Governor has declared May as "Operation Florida Valencias" month. I have instructed our 55 field men by telegram to concentrate their

promotional efforts on Valencias during May. Key chain store and super market buyers around the country are being contacted in person, and 6,000 others will get a special bulletin and a copy of the Governor's proclamation. We have allotted an additional $10,000 for prizes and premiums for retail store contests for the best Valencia promotions. We will run a special two-color newspaper advertisement on May 12 in principal markets around the country. Many important buyers will be at a Super Market Convention in Atlantic City, New Jersey, beginning Sunday. We will be there too, in force. We will distribute thousands of the little plastic oranges which many of you have seen, each with a note inside calling attention to Operation Florida Valencias. An airplane will fly over the Boardwalk at the busiest times pulling a banner for Florida Valencias. The trade papers and magazines are being contacted. All this is being done to inject new life into the fresh fruit market for our oranges.

Now, to achieve maximum results from this program, you growers, caretakers, production managers and shipshippers must cooperate by shipping good fruit to the Northern buyers — these same buyers we are appealing to. You can imagine their dismay and outright disgust if they go along with our promotion, tie-in with our advertising, set up a special sale on Florida Valencias, and then get stuck with some un-salable merchandise. So we likewise appeal to you here in the industry to do your part to make this campaign a success by shipping quality fruit that will mean repeat orders. And this doesn't apply just to May — this applies all the time.

I have just described a specific campaign on fresh Valencias during May. Now I would like to discuss with you the larger subject of our over-all advertising and merchandising situation. Several leaders in the industry have recently questioned whether we are doing enough in this field — whether five cents a box on oranges and tangerines and six cents on grapefruit is enough to do the kind of selling job we will have to do as our orange crop passes 100,000,000 boxes a year.

Well, let's see what our competition is doing in trying to take our business away from us and win the same new customers we're going after:

In 1951 the 100 top advertisers in America spent an average of about $6,500,000 each in their advertising programs. In 1958, the 100 top advertisers were spending over $14,000,000 each, on the average. This indicates the tremendously increased advertising that is being exposed daily to the consuming public.

Putting it in a slightly different way, total advertising in America increased from $5 billion in 1949 to over $11 billion in 1959. Even allowing for increased advertising costs, which I will tell you about in a few minutes, this amount of money invested in advertising again indicates the thousands of peeople and products bidding for Mrs. Housewife's attention.

Let's look at our principal citrus competitor, Sunkist Growers, of California. In terms of our 90-lb. box, on which we assess five cents for advertising, Sunkist assesses 14-1/3c — nearly three times as much. Sunkist spends $2.5 million to advertise their fresh oranges, while we are spending just a little more, $2.7 million, to advertise all our oranges and orange products — fresh, frozen, canned and chilled. Since we must, under the law, advertise in the same dollar proportion as the crop is utilized, we are spending this year about $480,000 to advertise fresh oranges, while Sunkist is spending all its $2.5 million on fresh — or six times as much.

A quick look at a competing fruit — cling peaches. California's Cling peaches are supported by an advertising rate 4½ times higher than ours for oranges.

You have all heard of a synthetic drink called "Tang". This product is typical of the manufactured products now on the market, with more to come, which compete strongly with our pure fruit juices for breakfast usage and throughout the day. We have been advised that General Foods Corporation is advertising "Tang" at a rate of about $7 million per year. This is not only more than our entire advertising and merchandising budget, for all our fruit and products, it is more than our entire expenditure for advertising, merchandising, research, transportation and all other operations for 1960!

In these days and times, many companies are spending up to 12% of their retail product value on advertising. Adding up all that we are doing, plus estimates of expenditures by private brand advertisers of Florida citrus, the total spent is barely 1% of the value of our fruit and juices in the stores.

Now, let's look at advertising costs. The inflationary spiral has been at work here, too. A four-color page insertion, one time, in LIFE, LOOK and the POST cost $52,000 10 years ago. Today it costs $122,000 — up 133%. Circulation is up too — but only 54%.

Take the popular Sunday supplements, like AMERICAN WEEKLY and THIS WEEK. A page in these two publications cost $49,600 in 1950 and $88,900 in 1960 — a 79% increase. Circulation is up 17.5%.

Consider newspapers with a circulation of 250,000 or more. In 1950 there were 41 of these, and the black and white line rate was $35.52. In 1960 there are 47 papers in this category, and the line rate is $54.03, or 55% higher. Incidentally, while six papers were added to the 250,000 circulation class in the ten year period, the total circulation gain of all these papers was just 4.2%.

Now we get to television. Many feel this is now the most effective mass medium for advertising. Certainly it has tremendous power in delivering a memorable message to millions of people in a vivid way. Let's look at the costs. The total cost for a half-hour night-time network program, on which the advertiser gets three minutes of commercial time, has jumped from $59,500 in 1953 to $98,900 in 1959 — up 66%. The cost per homes reached has gone up 16.6% even though there are more than twice as many sets in use today. These costs are based on the same number of stations broadcasting in 1953 and 1959. Actually, the number of network stations has doubled, so to effectively use TV and reach the greatest number of homes through available stations, costs would be considerably higher than the 1959 figures I gave you.

All these cost figures simply mean that the dollar spent for advertising 10 years ago — or six years ago, in the case of television — will buy about 60c worth of advertising today, and in some cases much less than that.

So, simply from increased costs alone, we are slipping behind in promoting Florida citrus at a rate comparable to that of the past several years. And this says nothing about increasing crops ahead, which will require the most vigorous and aggressive promotional effort to move them. Nor does it take into account the ever-increasing activity of the hundreds of drinks, beverages and other foods that compete with Florida citrus.

We are frequently asked about the effects of advertising, and this is of course very difficult to answer. No one has yet devised a fool-proof way or shirts or tubes of toothpaste — or to determine exactly how many cars oranges — are sold specifically by a page in LIFE or one minute on television. But we can measure consumer reaction to various advertising, and we can tell if the message is getting through to them. We also know that in the total absence of any kind of

advertising or promotion, the sales of a product will ultimately suffer, unless the producer is willing to give it away indefinitely.

Here in Florida citrus, we have moved over 47 million more boxes of oranges in the most recent five years, as compared to the previous five-year period. The total value of the five-year crop to the growers went from $499 million to $905 million. In sharper focus, the crop increase was 12%; the crop value increased 80%. This is a remarkable record of sales effectiveness.

Two fairly concrete and recent examples of the effectiveness of our Florida citrus advertising, which the Commission has been carrying on continuously for 25 years, are the remarkable record of sales after the freeze two years ago, and the concentrators promotion last fall.

After the freeze of 1957-58, our fruit and product prices rose sharply because of the reduction in the crop. We expected this, and we also felt that our sales of all fruit and products would drop drastically because of the higher prices. But this did not happen. The sales volume held up extremely well and for a much longer time than we expected. We could only attribute this to the fact that our continuous advertising and merchandising had fairly well convinced the housewife that our fruit and juices were her best natural source of her daily Vitamin C requirement — plus delicious good taste — and so she was willing to pay more to keep serving it to her family.

The second instance occurred in the special promotion sponsored and financed voluntarily by 22 producers of frozen orange concentrate last Fall — September through December. In order to attract new users and increase consumption of present users of concentrate, the packers spent $3.3 million in a special, four-month promotion featuring redeemable coupons and prizes. An independent market research survey has reported that both goals were achieved. Over half a million more new buyers were obtained than otherwise would have been the case, and present users bought more juice than they have previously. We believe this promotion has resulted in lasting gains for the product. More families are buying concentrate than were using it a year ago, and total sales to date this season are up 33% over last year. We think the concentrators' promotion provided the spark, not only to sell a lot of concentrate during the promotional period, but to win and keep new customers plus larger purchase per customer.

A very fair and reasonable question raised with the frequent discussion of a possible increase in the advertising assessment has to do with how the money might be spent. Of course, there has been no formal planning along this line, because this would be quite premature now, but I can give you some ideas which might be considered.

First of all, keeping in mind that the 1950 advertising dollar buys about 60c worth today, and keeping also in mind the heavy continuing expenditures by our competitors in and out of citrus, we could intensify and broaden our basic program — 12 months a year and properly balanced by media and by markets. By this I mean that we could bolster our program in markets where we are doing well, to protect our franchise, and at the same time have funds to move vigorously into new markets where help is needed. And we could reach a more satisfactory and efficient balance among magazines, television, supplements, newspapers, radio, and perhaps other media — so as to gain the best possible values in each according to the particular product and market.

And then we might consider putting on some so-called "hard sell" programs, such as the one by the concentrators I just described. Or the one we are putting on next month for Valencias. Additional funds could provide the means to put on a concentrated, short-term promotion in behalf of a particular variety of fresh fruit or a processed product which had adequate supplies to back up such a program. This could be superimposed over and above the continuing basic consumer advertising program. And the evidence is in that this type of "hard sell" promotion — tied in closely with our field merchandising — pays off in increased sales and continued benefits.

We might intensify our merchandising activity. We are presently appraising how this part of our promotional effort can be done better and more efficiently. If it appears that more of this direct-contact work is needed, or if we need more high-level specialists to make these contacts, then this could well be considered. We know we need to do more in the institutional feeding field, with restaurants, hospitals, industrial cafeterias, and so forth. This additional work might be done.

We are on the threshold of considerable opportunities in exports. If tariff problems are resolved reasonably, Western Europe can be a major outlet for Florida citrus in the years ahead. We could well consider expansion of our advertising and merchandising activity there to keep up with the very active efforts now being made by Spain, South Africa, and Israel to get that citrus business. And, if trade barriers interfere too much in Europe, we should consider development of other markets, such as South America or the Iron Curtain countries. And this would require more effort by us.

We are now setting up a special program for work with the schools and young people, in behalf of Florida citrus. Population estimates indicate this is where the bulk of our gains in the next 10 years will be, and I want to see us get busy there now. To do this job right will require a great deal of careful planning and a coordinated program of personal contact, useful printed materials and other training aids, special advertising beamed at youth, special work with PTA's and school lunch-room people, and many similar activities. This will cost money, but I am convinced it will be a sound investment, and the Commission has instructed us to proceed to set it up. This could be a most productive use for additional funds.

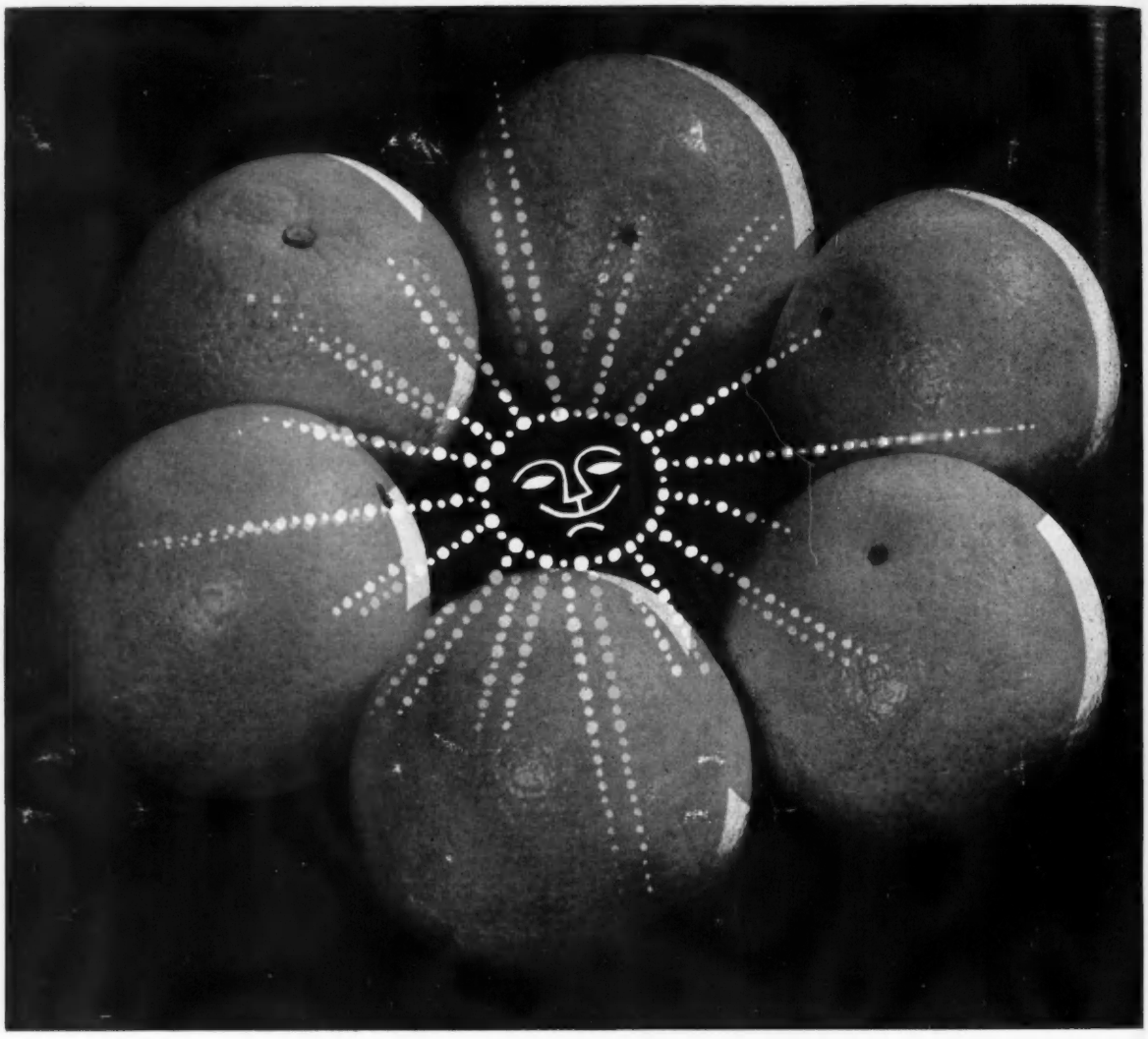
We are now spending about $90,000 in our advertising and general contact work with the doctors, dentists, nurses, dietitians, nutritionists, and similar groups. I think we would all agree this is a group that deserves a great deal more attention, because they influence so many millions of people every day.

And we are spending about $78,000 in work with the nation's food editors, in newspapers, magazines, supplements, radio and TV. This, too, is a field that could well be expanded to do a much more thorough job in reaching more of these important people more often. Your wife and mine read the food page daily, looking for new recipe ideas — new ways to prepare foods. Young wives, especially, could be approached more completely in an expanded program.

I have cited several possible fields here that might be considered in any discussion of how to make best use of advertising assessments. There are probably others that will occur to you, and we certainly welcome your suggestions. All these programs are aimed at one goal: to sell more and more Florida citrus at the best possible return for the Florida grower, dealer, shipper, and processor. This matter will undoubtedly come up frequently in the months ahead, and I am sure we will all be doing a lot of hard thinking about it.

The years ahead are going to present ready-made problems of high

(Continued on page 12)



For your summer sprays DITHANE® Z-78 (zineb)

Make sure of long-lasting control of rust mites in your citrus groves by using DITHANE Z-78, the time-tested zineb. You also can protect the *newly expanded flush of growth* from greasy spot with DITHANE Z-78 . . . and you can save time and money by eliminating sulfur applications when you include DITHANE Z-78 in your summer scalicide spray. The result is more fine-finish, bright-colored fruit that brings highest prices on the market. See your dealer for dosage and timing information.

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WASHINGTON SQUARE, PHILADELPHIA 5, PA.

DITHANE Z-78 . . . now 75% zineb

For fruit that's sunshine bright . . .

DITHANE Z-78

Greasy Spot -- Fact Or Fancy

By WILLIAM H. MATHEWS
Assistant Horticulturist
Agricultural Extension Service

Leaf drop has been extremely severe in many areas of the citrus belt this spring. One of the major causes was greasy spot, a disease some growers are beginning to think is their greatest production headache.

Much of this leaf drop occurred in areas of the state which did not recognize greasy spot as a problem as recently as 3 or 4 years ago. Is greasy spot new? Do rust mites cause it; what varieties of citrus does it affect; how do I check for it; what materials should I use; when should I spray? We frequently hear these questions asked.

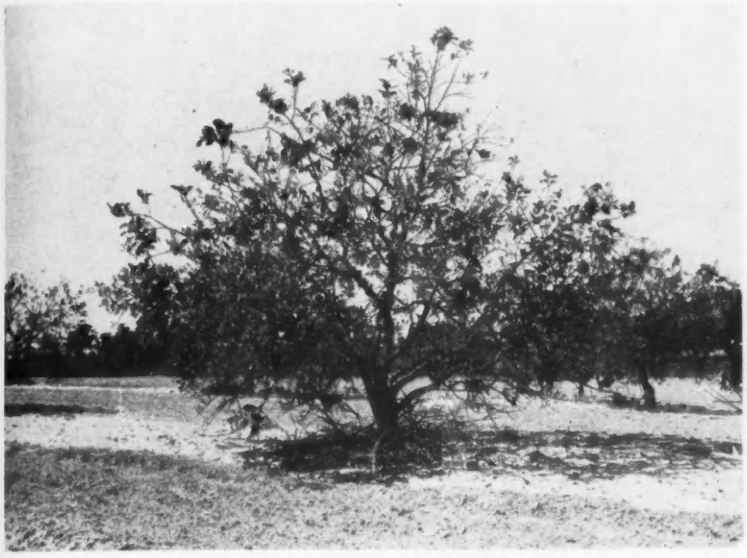

Fig. 1 — Red grapefruit tree severely defoliated by greasy spot.

In answering I shall attempt to separate the facts and fancies about this disease.

Greasy spot is not new, nor is it confined to Florida. Howard S. Fawcett (2) reported its presence here as early as 1915. The disease has plagued growers in California, Texas, the West Indies, Italy, Western Australia, the Philippines, Japan, Brazil, Argentina, and other citrus producing areas of the world.

Even though greasy spot has been with us for years, it was not considered an important pest of citrus until the middle 1940's. This increase of greasy spot coincides closely with the increasing use of parathion and decreasing use of oil for scale control.

For many years greasy spot was thought to be caused by rust mites (8). Today the evidence clearly indicates the problem is a fungus disease probably caused by **Cercospora** (1, 4, 9, 10, 11).

There are many cases on record in which greasy spot infections did not appear to have been secondary to any other cause. This does not eliminate the probability that a heavy rust mite population, or any other condition which might lower the vitality of the tree, may make the leaf more susceptible to attack by the fungus.

Many growers have the mistaken idea that greasy spot only attacks grapefruit. This is not true. There are varietal differences in susceptibility to greasy spot infection (7). Pink and red grapefruit seem to head the list, but white grapefruit, tangelos and some oranges are not far behind. Least susceptible are tangerines and temples.

Rapid growing varieties on rough lemon rootstock often appear to be more susceptible than slower growing ones. Such a combination produces many flushes of growth during a season, making it more difficult to protect each flush.

Age of tree also seems to have a bearing on degree of infection. Trees of all ages are found with infected leaves but young trees appear to be more seriously affected than older trees. Tops of trees are usually more seriously affected regardless of age.

There is no good time or way to inspect for greasy spot to prevent infection. Symptoms are most evident in the late winter on old mature leaves. The malady appears in the form of greasy brown spots. The actual infection occurred sometime during the previous spring and summer. Thus, by the time the grower is aware of the problem it is too late to do much about it.

The disease appears to re-occur in the same groves. If you have a severe greasy spot infection one year, take every precaution possible the following year to prevent a re-occurrence.

Prior to 1926, Japanese citrus growers were of the opinion that one application of a Bordeaux mixture in June, after the flush of new foliage

(Continued on page 11)

Fig. 2 — Greasy spot defoliation also occurs on early oranges.

ORTHO® ALMANAC FOR FLORIDA GROWERS

ORTHO Florida Citrus Spray Program: how and when to treat your crops for better yields

June is the time to...

Apply VOLCK Soluble Oil Spray with ORTHO Zineb 65 Wettable for most effective control of scale and rust mites in your groves.

VOLCK Soluble Oil Spray is highly refined and distilled to remove most impurities and give superior scale and mite killing power with maximum safety to trees. Specially formulated for use on Florida citrus, it has been used successfully by growers for years.

ORTHO Zineb 65 Wettable is very effective against rust mites, and should be used in conjunction with VOLCK Soluble Oil Spray. This miticide is compatible with most insecticides and can be safely used on oranges, grapefruit and tangerines.

Choose the ORTHO Citrus Spray Program. With the ORTHO Spray Program you buy ORTHO products formulated in Orlando specially to fit your needs, plus the benefits of ORTHO Field Service. Your crops get scientific supervision right through harvest, by fieldmen trained to spot the trouble and prescribe the remedy. This expert Field Service, combined with the research and technical experience that go into every ORTHO product, is the reason why ORTHO has been the choice of Florida growers for over 35 years.

ORTHO®

Helping the World Grow Better

For the ORTHO Citrus Spray Program best suited to your special needs, call your nearest ORTHO Fieldman!

California Spray-Chemical Corp. A subsidiary of California Chemical Co., P.O. Box 7067, Orlando, Florida

ON ALL CHEMICALS, READ DIRECTIONS AND CAUTIONS BEFORE USE. • TRITHION IS REG. T. M. OF STAUFFER CHEMICAL CO. T.M.'S REG. U.S. PAT. OFF.: ORTHO.

Meet your ORTHO team...

CLIFF SUTTON

Manager of North Florida Branch of Calspray located in Orlando. Received his B. S. degree in agriculture from University of Florida. Call Cliff at Winter Garden Branch Office, OL 6-2626.

CHARLES ASHLEY

Received his B. S. in entomology from Auburn. Worked three years citrus spraying and two years as a laboratory assistant before joining Calspray. Resides in Leesburg, phone ST 7-2063.

WEBSTER CARSON

Joined Calspray in 1956 after receiving his B. S. degree in agriculture from University of Florida. Resides in Plant City—contact him by calling 3-8351.

JEAN MABRY

Served as an entomologist for two years with the U. S. Army before joining Calspray in 1955. Received his degree in agriculture from U. of Florida. Jean resides in Lakeland. Call MU 6-4515.

J. S. MURPHY

Received his degree in agriculture from University of Florida. Before joining Calspray in 1955, worked at Citrus Experiment Station. Resides in Lake Alfred, phone FR 2-1422.

JOHN NOWELL

Received his B. S. degree in agriculture from University of Florida. Joined Calspray in 1955. John lives in Orlando. Reach him at GArden 4-6754.

RANDALL WILLIAMS

Randy sold livestock and poultry feeds before joining Calspray in 1957. Received his degree in agriculture from University of Florida Resides in Deland. Reach him by calling RE 4-0599.

Greasy Spot — Fact Or Fancy

(Continued from page 9)

growth had formed, reduced greasy spot (3).

Experiments in Florida indicate the above is pretty good advice for our growers today. Copper, oil emulsion and zineb sprays seem to be the best materials for control of greasy spot (1, 5, 6, 9). Of these, rely only on copper sprays for definite control when the disease becomes severe.

When applied for greasy spot alone, use sprays containing ½ pound of tri-basic copper sulphate per 100 gallons or its equivalent (about 0.4 oil emulsion gives fair control and lb. metallic copper/100 gal.). A 1.3% may be adequate when only a moderate case of the disease exists. Zineb at 1 pound per 100 gallons of water also gives fair control. When oil emulsion and zineb are mixed the combination is quite effective.

Sprays must be applied after the flush of growth is out and the new leaves matured. Chemicals have no affect on flushes which occur after they are applied. This eliminates the dormant and most normal post-bloom sprays for greasy spot control.

A spray applied within 1 to 3 months after the flush matures will give control. Therefore, a May application will protect the first spring flush but none of the subsequent ones. Sprays should be timed to control greasy spot on the largest flush of the year if only one spray is to be applied. This is usually the first flush of the year and control can be applied in June or July.

If defoliation from greasy spot has been severe in previous years two sprays are in order. The first, using copper to protect the spring flush, applied during May and a regular oil-zineb spray for scale and mites applied in July after the summer flush is out will protect this flush also.

Greasy spot is a fact today and no amount of wishful thinking will make it a fancy. More and more growers are learning this fact each year as the disease becomes severe in new

(Continued on next page)

Fig. 3 — Greasy spot as it appears on the under surface of the leaf.

Florida Citrus Looks To Next Decade

(Continued from page 7)

production. Two years ago, just after the freeze, I said we should start planning then so that we could be ready for the problems that we knew were coming, and which the freeze merely postponed. I feel that we have made considerable progress in these two years. There is a spirit of cooperation in the industry which is most encouraging. There will be ups and downs ahead, and we've got to keep in mind that in citrus no one person or group can take all the credit for the ups — neither can one person or group be solely blamed for the downs. While production will be high, on the plus side we have the rapid population gains and rising standard of living here and abroad. And we have the improvements in our products, the hard work on new ones, and the more efficient ways of distributing and selling. We will have to do a harder selling job, because there is no law that says a consumer has to choose Florida citrus out of the 7,000 items in today's super market. Our competition is smart, aggressive, and is spending money to sell. We've got to be just as alert — and a little bit more so.

Anyone can look into a crystal ball — but our future in Florida citrus has to be earned, not just predicted.

Greasy Spot — Fact Or Fancy

(Continued from preceding page)

areas of the state. In many groves greasy spot is the dominant factor in the timing of spray applications.

Bibliography

1. Cohen, M. 1959. Greasy Spot in Florida — Its control and apparent cause. Proc. Fla. State Hort. Soc. 72:56-61.
2. Fawcett, H. S. 1915. Citrus diseases of Florida and Cuba as compared with those of California. Calif. Agr. Expt. Sta. Bul. 262:153-210.
3. —— and H. A. Lee. 1926. Citrus diseases and their control. p. 229-231.
4. Fisher, F. E. 1954. Diseases of citrus insects. Greasy spot. Fla. Agr. Expt. Sta. Ann. Rept. p 168.
5. ——. 1955. Diseases of citrus insects. Greasy spot. Fla. Agr. Expt. Sta. Ann. Rept. p. 184-185.
6. ——. 1956. Diseases of citrus insects. Greasy spot. Fla. Agr. Expt. Sta. Ann. Rept. p. 169.
7. Griffiths, J. T. 1955. Greasy spot and factors related to its intensity and control in Florida citrus groves. Citrus Industry 36(5): 7, 10, 11.
8. Thompson, W. L. 1948. Greasy spot on citrus leaves. Citrus Industry 29(4): 20-21.
9. ——, R. B. Johnson and W. A. Simanton. 1955. Combined control of scale insects and mites on citrus. Fla. Agr. Expt. Sta. Ann. Rept. p. 177.
10. ——, R. B. Johnson and J. W. Sites. 1955. Greasy spot control. Citrus Industry 36(6):5-10, 14.
11. ——, J. R. King and E. J. Deszyck. 1956. Progress report on greasy spot and its control. Proc. Fla. Hort. Soc. 69:98-104.

World Citrus Science Organization Schedules Conference For Florida

Citrus scientists from all corners of the world are to meet in Florida during November to mark the second conference of the International Organization of Citrus Virologists. The first such meeting was held in California in 1957.

Approximately 300 research men from most of the world's citrus-producing countries are expected for the session scheduled for Winter Haven and Orlando on November 7-11.

One of the highlights of the conference will be a visit to the State Plant Board budwood registration nursery at Winter Haven to view the careful indexing of stock from virus-free citrus trees. The Florida budwood program is considered one of the leaders in the struggle to rid citrus plantings of the virus diseases which take an alarming toll of trees each year.

Another field trip will present methods employed in combatting spreading decline disease of citrus. This tour will include sampling techniques, the push and treat method of eradication, and control through the establishment of border barriers.

At least 30 papers are to be presented during the meeting and titles of several more are expected to be added before the deadline for contributions.

The program calls for the presentation of papers and examination of test plots and projects at the Citrus Experiment Station in Lake Alfred on November 7-8. A field trip the following day will take in the budwood nursery and the spreading decline program.

On November 10, papers will be presented at the U. S. Department of Agriculture Horticultural Station in Orlando. A business meeting occupies much of the final day's program on November 11, with a field trip scheduled to the station's experimental citrus plantings.

Papers will be offered on the various aspects of such major virus diseases of citrus as tristeza, psorosis, xyloporosis and exocortis.

Report Of Progress

(Continued from page 3)

ing the negotiating stages for the property, forming the Foundation, and doing necessary negotiating to get the research work going under contract with the Department of Agriculture, $80,000 has been raised, and this without a concentrated campaign. Now, to complete the financing of the first phase of the project, we need an additional $120,000, for which we earnestly urge your support.

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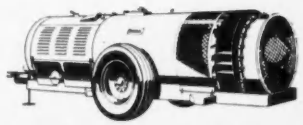

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The State Plant Board's Citrus Foundation Planting

A Talk By
G. D. BRIDGES

Before Gulf Citrus Growers' Institute, Dade City, April 29, 1960

You have all probably heard, many times, the story of the devastating destruction of the South American citrus industry by the virus disease TRISTEZA.

How, in a 20 year period, from 1930 to 1950, upwards of 20 million mature trees, budded on sour orange root-stock, were killed outright by this virus disease.

Visualize, if you will, the size of this loss in terms of our own industry — for this would represent the approximate equivalent of one half of all the commercial citrus trees in Florida.

In 1952, when tristeza was discovered in Florida, we had still further cause for alarm. Since that time eight years have passed during which we have seen no startling developments.

We realize that our commercial root-stocks, Florida Rough Lemon, Cleopatra Mandarin and Sweet Seedling, are all tolerant to the tristeza virus.

We also know that the strain of the tristeza virus in Florida is a very mild one.

And yet, **now** could be the very time for us to take stock; for us to guard against a feeling of complacency where virus diseases are concerned.

The severe freezes of 1957-'58 have again set us to thinking in terms of cold hardiness.

The sale and propagation of nursery trees budded on sour orange has again reached a very high level, certainly in some areas more trees are being planted on sour root than all other stocks combined.

And yet, **right now**, only 40 miles away, around Lake Apopka in west Orange county, tristeza is being spread by aphids.

It is true that this is the mild strain of the virus, but our scientists tell us that it is entirely possible for this mild strain, by natural change or mutation, to develop into a severe strain, and there is precedent for this opinion in the case of other plant viruses.

Within the last 12 months we of the Budwood Registration office have discovered a dozen of our registered parent trees, originally free of tristeza, that now are infected with the virus.

There seems to be no reason to doubt that as we are able to re-index all of our registered parent trees more of them will be found positive to this disease.

But, let's disregard, for the moment, the implications of this development and take a look at what disease is costing you Gulf Coast citrus growers now. The citrus tree survey, made between 1954 and 1957 disclosed the following situation in your counties:

This amounts to the loss of almost 9% of all commercial citrus trees over the four counties from disease, and means that over one half million trees in your groves are either diseased, have been removed from groves recently, or have been removed and a tree reset in that spot within three years.

Bear in mind that these figures were compiled **before** the severe winter of '57-58.

While I am not trying to suggest that all these trees were killed by virus diseases, the evidence indicates that a substantial part of them were.

It logically follows that from the very nature of virus disease many more trees in these same groves will die in the future.

Since you are practical men, you must be wondering what is being done to relieve this situation.

The answer is, of course, MANY THINGS.

My purpose today is to bring you up-to-date on just one of them — the State Plant Board's Citrus Foundation Planting.

Last year, at your Gulf Citrus Institute, Mr. Gerald Norman, who is in charge of the State Plant Board Budwood Registration Program, touched very briefly on this topic.

In this talk he stated that Phases Two and Three of the Budwood Program would consist of bringing together and planting in a single location the very best clones of our old line commercial varieties.

Also included in the planting would be nucellar seedling lines of our standard varieties, and seedling trees of the commonly used root-stock varieties that would some day become registered sources for standard seed.

In the Fall of 1959 the State Plant Board acquired the use of roughly 50 acres of rolling, sandy, pine land which is located 8 miles north of Haines City and just east oy US 27.

This tract has now been cleared, plowed and, in part, planted. Root-stocks are presently in place on 21 acres and the budding of this stock is in progress.

In addition to the root-stock mentioned, 268 nucellar seedling trees, from both open and closed pollination, are now in place at the foundation grove.

It will be the primary purpose of this planting to act as a reservoir — or "budwood bank" — so that the very best bud strains of our commercial varieties will be available to the industry at all times.

Early in the Budwood Program there were several developments apparent which could not be foreseen at the time the original Statement of Policy was written.

These developments seemed to make a foundation planting desirable or even mandatory.

Paramount among them were:

First, the extremely high rate of virus incidence in the "Old Line" selections of our more important commercial varieties.

Even after eliminating all trees showing any visible symptom of disease, by means of a careful preliminary inspection, the average rate of virus infection for trees under test by the Budwood Registration Program was for tristeza, 5.5%, for psorosis 6.8%, for xyloporosis a whopping 72%, and between 50 and 60% for exocortis.

It was common for a tree to be carrying two or even three virus diseases simultaneously.

In certain varieties, notably Valencias, it appeared that not more than one or two trees under test would eventually prove to be free of the four virus diseases being indexed for.

Secondly, there was a need for an

	Pasco	Hernando	Hillsborough	Pinellas
Total Citrus Trees	2,334,204	571,500	2,458,148	1,267,130
Total Bearing Age	1,806,142	353,424	1,890,073	922,002
Vacancies	62,248	15,566	58,467	33,133
Diseased Trees (Declining and Out of Production)	108,172	30,931	35,741	47,237
Non-bearing Resets	59,259	13,364	79,138	38,950
Vacancies, Non-bearing Resets, Diseased Trees	229,675	59,861	173,346	119,320

equitable method of distribution for budwood from certain outstanding trees which were not entered in the Budwood Program by participants, but which had become acquisitions of the State Plant Board.

Third was the growing interest in nucellar seedling lines as a source of vigorous-growing, virus-free budwood, and the need for a means of evaluating and comparing nucellar lines with the best clones of the "old line" selections.

This might be a good time for me to insert a word of caution to all growers. The personnel of the Citrus Budwood Registration Program and Advisory Committee are fully aware of the tremendous potential which seems to be offered by nucellar seedlings; but let's not forget that it is our standard varieties and old budwood lines that have brought the Florida Citrus Industry to where it is today.

The old lines are the ones that have been making you money.

There are many questions that must be answered before we could recommend the abandonment of our present selections for nucellar clones.

Last of the reasons for a Foundation Planting — which I am going to discuss — is the imperative need for continuous virus indexing of parent trees.

This feature alone would have made our Citrus Budwood Program unique in the world — and the value of this practice has been demonstrated many times.

The truth of this statement can be seen in the instance of the infection of the 12 parent trees with tristeza, which I mentioned earlier. Also in four locations, this Spring, follow-up inspections by Plant Board Inspectors have disclosed psorosis infection of registered nursery trees through the inadvertent budding of root sprouts and frozen back stumps which had previously been budded with unregistered budwood.

The very magnitude of this inspection job makes it necessary that we bring our most important clones together in one location for the effective accomplishment of this vitally important job.

The manner in which this continuous virus indexing will be effected is as follows:

Each clone of every variety that is brought into the Foundation grove will be budded across five different root-stocks. These are —

1st. Sour Orange — which will serve as a continuing check for the tristeza virus.

2nd. Sweet Lime — as a continuing check for xyloporosis.

3rd. Trifoliate orange — as a continuing check for the exocortis virus.

4th. Florida Rough Lemon — as a control tolerant to all three of the aforementioned viruses.

5th. Cleopatra Mandarin — again tolerant to the three viruses named and as an added control.

In addition to the primary function of supplying you with the very best budwood available, there are some very interesting, and potentially valuable, side features connected with this Foundation Planting.

I will name only a few.

This grove will be a source of budwood of known virus content that is available to research personnel for additional studies of virus diseases.

And what about the chance to restandardize and re-describe our standard varieties?

We all know that in both Pineapples and Valencias there are several strains that differ considerably.

Can our industry benefit from the outstanding vigor of Sweet Lime as a root-stock and its ability to produce high quality fruit on sandy land, if our budwood is free of xyloporosis?

In relation to cold hardiness, water tolerance, and outstanding fruit quality, can we, by using exocortis-free budwood, successfully use the trifoliate orange as a root-stock in Florida?

If so, can it be grown on our sandy soils?

Finally, just a word about the selections now planted or scheduled for planting in the Foundation grove this year. Of our old bud lines we have 13 varieties with from one to eight clones each. Already planted are 268 trees representing 14 varieties, all juvenile nucellar seedlings.

In summary: The State Plant Board's Citrus Foundation Planting is now a physical reality.

This planting will, we believe, make an important contribution toward the continuing success of the Florida Citrus Industry.

Lastly, the features which I have so hurriedly outlined here today represent — not the attainment of a goal, but rather a mere beginning, the real value of which will not be fully apparent for many years.

It will be through your continued interest, cooperation, and support that the full potential of the State Plant Board's Citrus Foundation Planting will some day be achieved.

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The Quality of Florida Grapefruit

. . . By . . .
GEORGE L. CAPEL

Quality improvement has been widely hailed as a means of stimulating the demand for grapefruit. Presumably, this viewpoint is inspired by the observation that consumers do, in fact, pay for quality differences in many products. For example, the difference in price of prime and commercial beef represents the amount that certain consumers are willing to pay for quality. Large, red, ripe, perfectly shaped hothouse tomatoes usually command a price almost twice that of field grown tomatoes. No doubt the price of some products can be enhanced by modifying certain characteristics of the product provided the modifications appeal to consumers.

Is the consumer equally willing to pay more for extra quality grapefruit? Before we can discuss this question, we must decide what we mean by quality.

Citrus fruits are classified as to quality on the basis of external appearance. Color, texture, varietal characteristics, shape, firmness and the extent of blemishes and discoloration are the primary characteristics covered by the U. S. grades for fresh citrus fruits. In addition, the grades specify that the fruit must be "mature". This is one view of quality.

Next, quality may refer primarily to internal factors. Taste, flavor or some other loosely defined term may be regarded as measures of quality. Objective measures of these factors, or of the things which affect these factors, must be used. The measures used to judge internal quality are the percent of soluble solids in the juice, the ratio of total soluble solids to acid and the amount of juice.

There have been two kinds of regulations designed to give consumers quality grapefruit. In one, the internal quality has been regulated. In the other, the grades and sizes of fresh grapefruit which may be shipped have been regulated. The latter applies to external appearance.

A review of standards for internal quality shows that the minimum soluble solids requirement has been raised for much of the fruit. Before the War, 7 percent was allowed for all fruit, fresh or processed. In the post-War years, this requirement has been increased. Now seeded grapefruit must have 8 percent soluble solids and seedless grapefruit must have 7.5 percent. There are, however, several exceptions. Grapefruit for canning may have 7 percent solids after December 1 and 6.5 percent after January 1. Pink seedless grapefruit for fresh consumption may have the same solids after the same dates. After January 1, white seedless may be shipped with solids of 7 percent and all seeded with solids of 7.5. These exceptions lower basic solids requirements but, even so, the requirements early in the season are higher.

The requirements for the ratio of total solids to acid have been the same for some years. Recently, some exceptions have been made, however. The basic requirements on a scale. With solids of 9 percent and lower, the ratio must be 7 to 1. With solids above 9 percent, the ratio requirement declines. From a 7 to 1 requirement at 9 percent solids, the required ratio declines to 6 to 1 at 12 percent. The recent exceptions allow a ratio of 6 to 1 on all grapefruit after April 15. Grapefruit for canning after January 1 needs a ratio of only 6 to 1.

A third physical measure of internal quality is the volume of juice in the fruit. The regulations specify the minimum amount of juice which must be in each fruit, by size. These requirements were raised in 1949. The amount of juice, in cubic centimeters, required by the 1945 and 1949 laws are as follows:

Size of Fruit	1945	1949
36	280	320
46	260	290
54	240	255
64	220	240
70	200	210
80	180	190
96	160	170

Of current interest is the upward revision in juice requirements by the 1955 Legislature. However, this change is too recent to have had an effect upon the demand for grapefruit.

We can see then, that the soluble solids requirements have been raised, in general, in spite of some downward revisions. The ratio requirements have remained constant except for being lowered for processing and for fresh shipments late in the season. Juice requirements have been raised.

While the maturity of Florida citrus fruits has been regulated by state law, the grades and sizes which may be shipped have been regulated by the Secretary of Agriculture, with the advice of a Growers Administrative Committee and a Shippers Advisory Committee functioning under a Federal Marketing Agreement. Frequent regulations specify the sizes and grades which may be shipped for each of four categories of grapefruit as well as for oranges and tangerines. Grapefruit are regulated sparately as pink or white, seeded or seedless.

A review was made of the regulations from 1945-46 to 1953-54. Two changes were noted. First, the regulations became more complex. During the earlier years of the period, one minimum size and one low grade set for each type of fruit. Later, many regulations specify that for a certain grade, size 96, for example, grapefruit may be shipped. For lower grades, size 80, for example, is the smallest allowable. For some periods, only certain small sizes were allowed for the lower grades.

Second, the tendency has been to reduce the number of grades and sizes of white seeded grapefruit which may be shipped. To a limited extent, the same trend is observed for pink seeded.

It must be kept in mind that the purpose of these regulations is not just to give the consumer better quality grapefruit, although this may be the effect. In 1939, in establishing the marketing order, the Secretary of Agriculture said, in part, ". . . that the regulation of shipments of such fruit by grades or sizes, as prescribed herein, will

(Continued on page 18)

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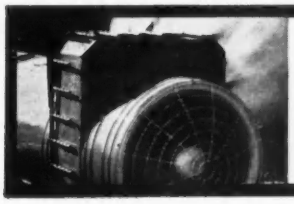

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The Quality Of Florida Grapefruit

(Continued from page 16)

serve to prevent marked fluctuations in prices to produce thereof, and will establish and maintain a more stabilized market for such fruit, tending to establish prices to the producers thereof at a level that will give such fruit a purcasing power with respect to articles that the producers thereof buy equivalent to the purchasing power of such fruit during the base period . . ."

In the statement of policy prior to the start of the 1945-46 season, the Growers Administrative Committee found that it was necessary to regulate the grades and sizes of grapefruit, ". . . in order, (1) to protect the fresh markets by regulating the grades and sizes of fruit sent to such markets, (2) to conserve labor, materials and transportation which might otherwise be waster in shipping inferior fruit, when large supplies of superior grades and sizes are available for the purpose, (3) to protect the reputation of Florida grapefruit, an advertised product, against the shipment and sale of fruit which would be a reflection against it, and (4) to effectuate the declared purposes of the marketing agreement and order."

These statements emphasize that the purpose of the regulations is primarily to restrict the supply of "undesirable" grades and sizes by adjusting to the market. Quality improvement is a corollary purpose, as evidenced by the aim of the Growers Administrative Committee to "protect the reputation" of Florida grapefruit. This purpose is not followed invariably, however, because in short crop years, lower grades and smaller sizes may be shipped. In high crop years, the restriction is to higher grades and larger sizes.

How do consumers react to the grapefruit they get under these regulations? Dr. Paul Harding, of the U. S. Department of Agriculture, Horticultural Crops Field Station, Orlando, Florida, made a study of the seasonal changes in grapefruit. In this study, published as U.S.D.A. Technical Bulletin No. 886, he had a taste panel rate grapefruit about every four weeks during the several seasons.

He recorded the measurable characteristics which were found in fruit which the panel rated as "acceptable" or "unacceptable". In Table 1, results for white seeded and white seedless on rough lemon and sour orange rootstock are presented along with an indication of whether or not the samples are legally mature. These data show, for example, that for Marsh on Rough Lemon rootstock, the first samples which pass the maturity standards were picked between December 18 and 23.

The fruit was rated "unacceptable" by the panel, however, and so was the fruit picked during the January 15 to 20 period. The first "acceptable" fruit was picked during the next period — February 12 to 17. The samples for the other three combinations were acceptable to the panel and passed the legal test one four-week period earlier. The important fact for our purposes is that, in each case, the fruit would pass the legal standards two time periods ahead of an "acceptable" rating by the panel.

Studies of consumer opinion show that large segments of the consuming public do not like grapefruit because, in their words, grapefruit is "sour", "acid" or "bitter". These terms are used to describe both fresh and processed products. The number of consumers who hold these views gives them importance. Of course, some have a different view. To them, grapefruit is "tangy", "invigorating", or "refreshing".

Next, let us consider the ways in which quality may vary.

First, there are changes in quality as a season progresses. In his studies of seasonal changes in grapefruit Dr. Harding showed that total solids, the solids-acid ratio and juice per 100 grams of fruit all increase during the season while total acid declines throughout. These facts agree with the general observation that the taste of grapfruit improves as the shipping season progresses. Dr. Harding's panel accordingly said grapefruit was better tasting as the season progressed.

Second, grapefruit quality varies from season to season. Grapefruit is said to be characterized by "high acid years" and low acid years". Dr. Harding's work shows that the ratio, total solids, total acid and the panel's ratings of taste all vary between years. Fruit fram the same grove vary widely in these respects. Simple averages of the percent acid observed during March for the grove locations included in Dr. Harding's study are as follows:

Season:	Average Acid:
1939-40	1.13
1940-41	1.36
1941-42	1.08
1942-43	1.36

Data collected by the Citrus and Vegetable Inspection Division also tend to show that this is true. They have compiled data on samples taken of grapefruit arriving at processing plants. Season averages of these data show that the acid is as follows for five seasons:

Season:	Average Acid:
1949-50	1.40
1950-51	1.35
1951-52	1.28
1952-53	1.36
1953-54	1.23

These two sets of data clearly show that acid does vary between seasons.

Third, the quality of processed products varies. The original and presumably good taste of processed products deteriorates over time. In proper inventory control, this does not become a problem. Excess purchases by distributors or individual stores can result in holding stocks too long. Also, some distributors may inadvertently let some supplies remain in storage or on retail shelves while recent purchases are sold. This results in very old supplies being made available to the public. The effect of this practice upon the sales of processed products is undoubtedly like the effect upon fresh sales of selling immature fruit.

The next question is, in view of the variation in quality between periods within a season, between seasons and between individual cans of grapefruit products, what is the wise action to take? Would more grapefruit be consumed if standards were raised further? If so, should the restriction primarily limit early season movement or raise the requirement generally?

Consumer surveys and the reactions of Dr. Harding's taste panel suggest that if quality were higher, people might consume more grapefruit. Despite the few who consider grapefruit "invigorating",

many others say they do not eat grapefruit because they do not like the taste. If quality improvement is to increase consumption, the attitude of these people must be changed. It is not enough for a consumer to say that he likes a grapefruit with a 9 to 1 better than a 6 to 1 ratio. He must come to expect to like grapefruit when he purchases it. Therefore, while raising standards would not necessarily immediately increase demand, it might have a stimulating effect over a period of years.

Would it be better to limit shipments early in the season or to raise the standards throughout the season? Some observers believe that consumers generally are not informed about the seasonal changes in grapefruit. If a consumer eats grapefruit in October which he does not like, he may conclude that Florida grapefruit is always sour rather than conclude that it is sour now but will be better in the spring. Also, the taste panel in Dr. Harding's studies generally approved of grapefruit after January 1. This suggests that the unfavorable opinions about grapefruit are caused primarily by the quality of much of the early season fruit.

There is a second school of thought: that unfavorable reactions to grapefruit in October, for example, do not guide consumer behavior in March. Furthermore, some consumers doggedly purchase early grapefruit at high prices. Therefore, it is concluded that early grapefruit must not affect their later purchases, or that there must be a body of consumers who prefer, or will readily accept, high acid grapefruit.

There is, of course, the problem that delaying the start of picking will shorten the marketing period. The benefit, if any, of limiting early shipments must be balanced against the potential loss from crowding more fruit into a shorter season. Furthermore, there is a question of equity to individual growers who now benefit from early marketings.

The use of sprays to reduce acidity has been suggested as a tool for improving the quality of grapefruit. At present, sprays are used to effect the ratio of grapefruit sufficiently for it to pass the maturity tests early in the season. Also sprays may be used on grapefruit which would have difficulty passing throughout the season. When the general suggestion is made to use sprays, presumably it is meant for general improvement throughout the season.

The difficulty with the suggestion is that there is little inducement for the grower to improve the ratio above the legal minimum. There is inducement to reach the standard early in the season, because prices are high then, but if grapefruit will pass eventually without spraying, the grower is not rewarded, in terms of prices. Inducement for spraying may be added by raising the level of the requirements. Then more groves would have to be sprayed to pass the maturity tests. Of course, spraying may add to the length of the potential marketing season for the fruit form an individual grove. If so, the cost may be justified.

There are some who argue that this is not the full story. They say that while the ratio is increased by the use of spray, the real quality of the fruit is impaired. This may be the case, but Dr. Harding's tasters liked grapefruit better when it had received a spray to reduce acidity than they liked untreated fruit.

It must be borne in mind that quality improvement by any method comes at a cost. This cost may be in terms of higher production costs per acre or through a lower output of legally mature fruit or both. More money may be spent on reduction practices to improve quality without an increase in output. This results in higher production costs per box of marketable fruit. If quality standards are raised, a larger portion of the fruit may be unmarketable. With the same production costs per acre and less fruit sold, a higher production cost per box of marketable fruit results.

In summary, surveys and tests suggest that many people do not like the grapefruit they now get. Some observers believe this unfortunate opinion is formed by the reaction to fruit that is sold early in the season. Others believe the problem is too low standards. If either of these beliefs is true, higher standards may have a stimulating effect upon consumption over a period of years. However, careful reflection would suggest that quality improvement is not the only or most important solution to the current situation of depressed prices. On the contary, if the legal standards have meaning, a higher quality of grapfruit is going to market now than ever before.

FRUIT AND VEGETABLE MARKETING COSTS IN 1959 SLIGHTLY LOWER

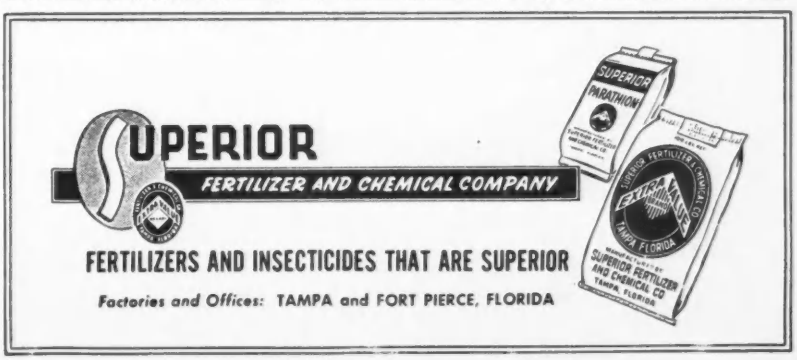
Increased efficiency in distributing fresh fruit and vegetables in 1959 resulted in a reduction of marketing costs for the first time in nearly 12 years, according to a University of Florida marketing specialist.

S. E. Rosenberger, associate marketing specialist in vegetable crops with the Florida Agricultural Extension Service, says this was accomplished through some reduced hauling rates, improved containers, better labor efficiency, more direct procurement and expanded self-service.

Continuous and virourous reappraisals of the current operations are necessary to keep us with rapidly changing trends, says Rosenberger.

He adds the need for improved layouts, labor-saving devices, increased worker performance, personnel improvement, and better recruitment procedures will become more acute as the cost-price squeeze intensifies.

Accidents to farm residents cost the nation 1¼ billion dollars each year, the National Safety Council reports. Counting the 20 million farm residents, the 10 million people in related industries and the six million farm suppliers, a sizable chunk of the population suffers from farm accidents.



The Florida Grapefruit Situation

. . . By . . .

H. G. HAMILTON

The Florida grapefruit situation is so inter-related with the national grapefruit industry that an analysis of it involves (1) national production and production potentials, (2) trends in utilization, (3) trends in domestic consumption. In addition, the Florida grapefruit situation is concerned with foreign markets and the nature and extent of the cost-price squeeze.

Because our economy is so different today than it was prior to and during World War II, it is more realistic to confine our analysis to the post-War II period. Two significant things have happened in this period; one, the introduction of frozen concentrate orange juice and, two, a series of freezes in all U. S. producing areas except Florida. Only the 3-year period, 1945-46 to 1947-48, was free from the influence of both these factors.

National Production and Production Potentials

During the first three seasons following World War II, U. S. grapefruit production averaged 61,533 boxes, of which Florida produced 51 percent (Table 1).

During the next three years there were a number of freezes outside Florida which wiped out the Texas industry and damaged that of Arizona and California. During this period, U. S. grapefruit production averaged 42,870,000 boxes, only 70 percent of the total for the preceding three years. Florida produced 78 percent of the U. S. production in this period. Frozen orange concentrate became an important market outlet during this period. In the 1950-51 season 23 million boxes were marketed as frozen orange concentrate, which was 21 million boxes greater than the 1947-48 season, only three years before.

National grapefruit production during the last four years averaged slightly less than in the years of the freezes while Florida production averaged 85 percent of the total. During the past four years Florida grapefruit production has been 15 percent greater than it was for the three years immediately after the war but U. S. production has been 31 percent less.

TABLE 1
Average Season Grapefruit Production by Periods and by States

Period	Number of Seasons	Florida	Texas	All Other	U. S.	Percent Florida is of U.S.
			1,000 Boxes			
1945-46 - 1947-48	3	31337	23500	6700	61533	51
1948-49 - 1950-51	3	29200	8400	5270	42870	78
1951-52 - 1954-55	4	36178	1075	5109	42362	85

Source: Adopted from Florida Citrus Fruit, 1954, U.S.D.A. and Crop Production, July 11, 1955, U.S.D.A.

Production potentials are best indicated by acreage, tree number and distribution of planting. For the three-year period following the war (before the freezes), there were 198,000 bearing acres of grapefruit in the U. S., of which 46 per cent was in Florida. Over the next three years Florida accounted for 54 percent of a national total which had dropped to 184,000 acres. During the four-year period 1951-52 to 1954-55, the national average was 140,000 acres, with Florida contributing 78 percent (Table 2).

Because of greater yields Florida has a slightly larger share of the grapefruit production than of the acreage.

The age distribution of the trees in Florida further explains why this state leads in production of grapefruit. As of January 1, 1955, it was estimated that Florida had 7,629,000 grapefruit trees. About 75 percent of these were 16 years of age or older. Grapefruit acreage in both California and Arizona reached its peak in the 1937-38 season. Since that time, the acreage in these states has declined.

The acreage in California and Arizona during the past four years is one-third less than the average acreage from 1945-46 to 1947-48. Texas reached a peak of 82,000 acres in 1948-49, the year of the freeze, and decreased to 18,000 acres in 1951-52. Since then Texas plant-

TABLE 2
Average Bearing Acreage of Grapefruit by Periods and by States

Period	Number of Seasons	Florida	Texas	All Other	U. S.	Percent is of U.S.
			1,000 Acres			
1945-46 - 1947-48	3	91.5	79.0	27.8	198.3	46
1948-49 - 1950-51	3	97.8	64.7	21.3	183.8	54
1951-52 - 1954-551/	4	110.0	20.9	9.0	139.9	78

1/ 1954-55 estimated.

Source: Florida Citrus Fruit, 1954, U.S.D.A. and Crop Production, July 11, 1955, U.S.D.A.

TABLE 3
Estimated Number of Grapefruit Trees by Age Groups, Florida (as of January 1, 1955) and Texas (as of July 1, 1955)

Age	Florida1/	Texas 2/
Under 4 years of age	596,0003/	1,058,666
4 years of age	-	59,261
4 to 5 years of age	421,000	-
6 to 10 years of age	780,000	-
11 to 15 years of age	428,000	-
16 years and over	5,605,000	-
5 years and over	-	1,567,057
Total	7,830,000	2,684,984

Source: 1/ Adapted from Florida Citrus Fruit Annual Summary, 1954.

2/ Report of Mexican Fruit Fly and Black Fly Project, Agricultural Research Service, U.S.D.A.

3/ Zach Savage, Movement of Florida Citrus Trees From Nurseries, Agricultural Economics Mimeographed Report 55-3.

ing and recovery of trees injured by the freeze have made marked progress. Texas production is only 7 percent that of Florida while her acreage is about one-third. The ages of Florida and Texas grapefruit trees are given in Table 3.

The combined acreage of Florida and Texas in 1954-55 was about 75 percent of their 1948-49 acreage but the combined production was only 66 percent. Apparently some people in Florida and Texas believe that the industry will be profitable in the future or new plantings to grapefruit would cease.

Utilization of the Grapefruit Crop

Fresh and processed products constitute the two major market outlets for grapefruit. During the three-year period immediately following War II, about 53 percent of the nation's crop was marketed in processed form. For many years prior to the Texas freezes Florida marketed more grapefruit in processed than in fresh form (Table 4). Texas always has marketed the greater percentage of her crop in fresh form. With plantings in Texas being made to the more preferred varieties for fresh consumption Florida faces even stiffer competition from Texas in the fresh market than before the freeze.

Domestic Consumption

The combined effect of an increased population, relatively stable exports and a decreased supply of grapefruit has resulted in a decline in the per capita supply for the last several years (Figure 1). Apparently the per capita demand for grapefruit has fallen or else the price would be higher with such a small per capita supply.

Foreign Markets

When prices of a product are low, it is only natural to look to foreign markets as a source of relief. Since 1930 the United States has produced 90 percent and consumed upwards of 85 percent of the world's grapefruit (Figure 2). Except for Israel (with a production of 1½ million boxes), Jamaica and other United Kingdom countries are about the only source of supply of grapefruit outside the United States. The English market is the primary outlet for the United Kingdom countries. Israel depends largely on the European markets.

Except for Canada there has been no significant foreign market for U. S. grapefruit. From time to time there has been a spasmodic market for U. S. processed grapefruit in England and continental Europe, but there has never been a sustained market of any volume.

Very little grapefruit is consumed except in the United States and Canada. The situation is entirely different from the world markets for wheat, cotton or tobacco. The United States is a big exporter of all of these commodities—but there is a big world market for these commodities. In the case of these commodities it is not a question of can foreign markets be developed, for they already exist. The problem is one of competing with other producing countries. If prices in the United States fall appreciably, they can be relieved to a considerable degree by exports. Should the U. S. acquire all the foreign trade in grapefruit it would amount to very little unless these markets can be expanded.

Some recent reports coming from Europe are most encouraging. Per capita income is above pre-war in most countries. Because of this and the large population of Europe the potentials are great.

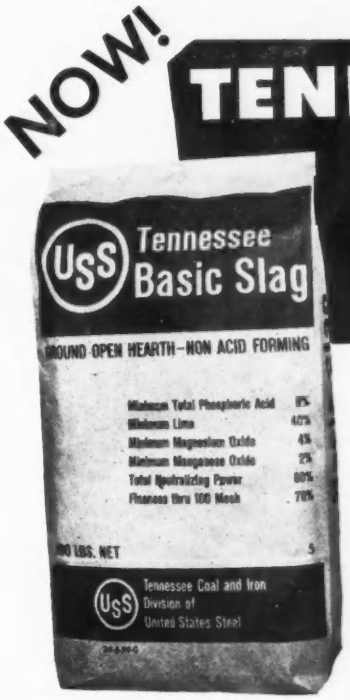
There are two factors confronting the industry with respect to exports: one, the political aspect—state trading, and two, the cost of creating a market should the political situa-

TABLE 4

Average Season Utalization of Florida, Texas and U. S. Grapefruit Crops by Periods

Period	Number of Seasons	Florida		Texas		U.S.	
		Fresh	Processed	Fresh	Processed	Fresh	Processed
1945-46 - 1947-48	3	9982	19151	13123	9381	26968	30669
1948-49 - 1950-51	3	13174	15883	4202	4133	20173	23636
1951-52 - 1954-55	4	18566	16094	443	153	22856	18223

Source: Adapted from Florida Citrus Fruit, 1954, U.S.D.A. and Growers Administrative Committee Statistical Bulletin No. 41, July 2, 1955.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tion turn favorable. The course of action is clear with respect to the political aspects. If we had a free world market for grapefruit, the United States would likely benefit the most. Hence the industry should strive for a market without political barriers.

The course of action in creating a foreign demand is not so clear. How far the industry should go can best be determined only by trial. If political restrictions are lifted, the industry should carry on an aggressive promotional campaign in a limited area, and if the effects are encouraging, broaden the scope of the work. Certainly, an aggressive and extensive promotional campaign should not be undertaken until the market potential has been tested on a small scale.

TABLE 5

Estimated Per Acre Net Income From Florida Grapefruit, 1945-46 — 1953-54

Season	Acres of Florida Grapefruit	Value of All Florida Sales On-tree	Per-acre Value of On-tree1/	Per-acre of Producing Citrus	Profit per Acre
	(000)	(000)			
1945-46	90.5	$40,485	$447	$169	$278
1946-47	91.0	16,612	182	199	-17
1947-48	93.0	7,577	81	198	-117
1948-49	95.0	20,078	211	174	37
1949-50	98.5	43,023	436	164	272
1950-51	100.0	31,037	310	218	92
1951-52	104.3	17,307	166	239	-73
1952-53	108.0	24,703	229	231	-2
1953-54	111.3	20,199	181	244	-63

1/ Source: Zach Savage, Twenty-two Years of Citrus Costs and Returns in Florida, 1931-1953, Agricultural Extension Service Mimeographed Report No. 55-1.

The Cost-Price Squeeze

There probably has never been a year so bad but when some Florida grapefruit growers made a profit and perhaps never a year so good that some did not lose. While data are inadequate to determine how profitable individual growers may have been, cost and income data are sufficient to indicate the relative profitableness of the industry in our time. During War II profits were very high. The 1945-46 season was quite profitable. Data indicate that the 1946-47 season was a red-ink year and 1947-48 was perhaps the worst season the industry ever experienced. The 1948-49 and 1950-51 seasons were fair and the 1949-50 season was very good. These were seasons of a series of freezes in California and Texas. Since the 1950-51 season many growers have suffered losses.

National supplies were not excessive during the past three or four years. Profits have been affected by rising cost as shown in Table 5.

Returns were high in the 1945-46 and 1949-50 seasons. Returns during the past 10 seasons have been high only when Texas and California suffered from freezes or when there was no concentrated orange juice. With orange concentrate here to stay and Texas recovering from the freezes, it is believed that returns will continue low unless the demand for existing grapefruit products can be increased or new uses discovered. If costs continue to rise and demand fails to increase, profits will surely decline.

Presumably, the profit level could fall so low that plantings would cease entirely. However, the crucial profit level is unknown. In the past there has been a significant relationship between net returns per acre and movement of grapefruit trees from nurseries (Figure 3). The question is not solely one of bringing black ink. To a considerable extent it is whether something else is more profitable. The possibility of something else is quite good for Texas because her soil is well adapted to many other crops. With new dams, apparently water will not be a limiting factor in the near future. Florida soil, except for oranges, is less adapted to other crops. Therefore, Florida growers will be less able to switch from grapefruit to other crops.

The availability of land for increasing citrus acreage depends upon the relative returns of land in other uses. There is much suitable citrus land still unplanted both in Florida and Texas, and, for that matter, in Arizona and California. The way this land will be utilized is largely a matter of whether it will return more when planted to grapefruit than to other crops.

CITRUS MUTUAL HEAD NAMED COMMISSIONER

VERNON L. CONNER

Vernon L. Conner, 57, president of Florida Citrus Mutual, was appointed today to the Florida Citrus Commission by Gov. LeRoy Collins.

Five other citrus commissioners on the 12-man board were reappointed for two-year terms.

The new member replaces Nash Legette, 50, of Leesburg who was first appointed in 1950 by Gov. Collins.

Togetherness Move

The appointment of Conner, a Mount Dora grower, was seen by some spokesmen in the industry as a move to bring Mutual and the Commission closer together.

Conner has been president of Florida Citrus Mutual for more than four years, taking over the organization in 1956 following the death of State Rep. Perry Murray.

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Industry Control Programs For Grapefruit

. . . By . . .
L. A. POWELL, SR.

Some members of the Florida grapefruit industry appear to be increasingly interested in the formulation of a control program, prompted, no doubt, by the depressed condition of the industry. It is understandable why such proposals do not meet with unanimous approval. Because the capacities and efficiencies of individual growers vary, a control program, whatever its nature, will affect the interests and welfare of these individuals differently.

Differences regarding the issue also arise because of the various attitudes that people have toward regulation and regimentation. On one extreme some program enthusiasts, apparently, are of the opinion that control programs can perform miracles. On the other, fervent supporters of free enterprise are convinced that control programs are detrimental to the interests of the industry as a whole.

Control programs have been and can be quite effective in achieving specific objectives, especially over short periods. However, a program may be extremely successful for a short while and yet in the long run bring economic disaster to an industry.

A rational consideration of control programs requires a recognition of two important problems: (1) selection of objectives, and (2) choice of method. Objectives should be sensibly selected with regard to the long-range as well as immediate economic interests of the industry. Of no less importance — methods carrying out the problem should also be adopted that would insure achievement of the objectives.

Then too, there is the human element. Failure to achieve an objective with a given program need not imply that the objective is impossible nor that the program is necessarily at fault. If the planned program were consistent with the intended objective it would more than likely mean that some or possibly most of the participants were willing to diligently carry out their expressed plans. For this reason most control programs are of a compulsory nature.

Needless to say, the control program is yet to be devised that will make everyone happy — although some are less distasteful than others. With this in mind, it is desirable to briefly examine the various types of programs that may be undertaken by an industry. Control programs are not just schemes of perfection that shower an industry with benefits — whatever the progam it will have some limitations.

The types of control programs of concern here usually imply some form of supply restriction to increase price. This does not necessarily mean, however, that the total supply of grapefruit must be restricted in order to raise the average price of raw fruit.

If the industry is faced with multiple demands of a different nature, all that is required is a controlled manipulation of the different quantities of the product that go to satisfy the several demands. In short, discriminate between markets by reducing sales in a market in which a small withdrawal of fruit affect a large price increase and by increasing sales in a market in which increased sales result in only a relatively small decline in price.

When market discrimination is practiced, the industry attempts to redistribute the supply of the product among the several markets until the final bits of revenue from each market are equal. Under competition the price of the product would be the same in all markets except for differences in costs of transportation.

Remember, however, that the industry desires to charge different prices in the separate markets because such a system of pricing will increase gross returns to the industry. The industry is not interested in equal prices in the separate markets but in equal marginal revenues or equal final bits of revenue from each market. This concept is not nearly as confusing as it appears to be.

To avoid dealing with such cumbersone figures as millions of boxes, assume that 5 boxes of fruit represent the total year's supply and that it is to be sold in two small separate markets. Suppose that in one market 1 box could be sold for $6 and 2 boxes for $10. Notice that the price per box is $6 when 1 box is sold but only $5 when 2 boxes are sold.

Looking at it in a slightly different way we may account for the $10 total revenue in terms of marginal revenue. The first box would bring $6 but since 2 boxes sell for $10, the second box really adds only $4 to the amount that 1 box would have brought. The $4 is the marginal revenue from selling 2 boxes instead of 1 in this market. Now consider the second market.

Assume that in this market 1 box sells for $8, 2 boxes for $14 and 3 boxes for $18. The price for 1 box would be $8, for 2 boxes it would average $7 per box and for 3 boxes $6. How would marginal revenue look? By selling 2 boxes instead of 1, total revenue rises from $8 to $14, meaning that the second box added $6 to total revenue. When 3 boxes are sold instead of 2, total revenue goes up to $18. Thus, the third box has a marginal revenue of $4.

How could the industry benefit from controlling sales in the two markets? Without control, the price would be about $5.50 per box in each market with 1½ boxes selling in the first market and 3½ boxes in the second. By allocating the sales between the two markets at the point where the marginal revenues were equal, that is at $4, the industry could charge a price of $5 per box and sell 2 boxes in the first market and dispose of the remaining 3 boxes in the second market at a price of $6 per box. This system of pricing would raise the over-all average price to $5.60 per box and, of course, would increase gross revenue.

With sufficient control, discrimination may be practiced in several different ways — between different types of consuming groups in the same market, between different geographic areas and, in a sense, between different periods of time. However, the principle remains the same — gross recipts can be improved by equalizing the market marginal revenues.

Several types of market controls that are possible in theory are im-

(Continued on page 26)

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Reports Of Our Field Men . . .

HIGHLANDS AND POLK COUNTIES

R. E. Lassiter, Jr. & R. S. Carlin
P. O. Box 1304
Winter Haven, Fla.

The ridge area has experienced excellent growing conditions this last month with adequate rainfall up to the time of this writing.

Growers should not be overly alarmed at the droppage of small fruit as the tree is in the process of natural selection after a heavy bloom.

We find ourselves in the middle of the summer fertilizer program and looking ahead to the summer scalicide. Scale has not been a widespread problem lately; however, to keep populations low it is advisable to apply a summer scale control. Rust Mite are on the increase and should be kept at a low level until the summer scalicide with a control also included in that application. At this time, a sulfur dust is the best intermediate Rust Mite control.

Good crops to you.

HILLSBOROUGH, PASCO AND SUMTER COUNTIES

C. W. Dean
Gibsonton, Fla.
Phone Tampa 40-2592

Citrus in general looks good with the exception of lack of rain. Most of the Valencia oranges have been moved or are being moved by this time. The young citrus trees are putting on a summer flush of growth.

The vegetable farmers are harvesting pepper, squash, cukes and beans. Most crops look good and are yielding good. Crops away from irrigation are badly in need of rain.

Citrus is being irrigated in the places that are set up for such. Am noticing some suffering in the citrus for lack of moisture. Most of the growers have maintained a fair amount of moisture by harrowing lightly thereby forming a mulch, but even with all the unfavorable weather conditions we have had so far this year, things in general look good.

NORTH CENTRAL FLORIDA

V. E. Bourland
Winter Garden, Fla.
Phone 107

We are having beautiful weather with cool nights. Groves are looking fine, and it seems that we are going to have a very good crop of fruit of all varieties, tangerines look now as if they will have the heaviest crop we have had in a number of years. Young trees have made a good growth in spite of the aphids. Most growers are cultivating to hold moisture, some spraying being done, and most growers are planning their summer application of fertilizer. Truck farmers are cleaning up their cabbage, and working pepper and egg plant, some beans will be picked in the next week or ten days. Some melon fields look very good. Pastures are improving every day, and cattle getting in good shape.

SOUTH POLK, HIGHLANDS, HARDEE AND DeSOTO COUNTIES

C. R. Wingfield
Phone: Glendale 3-4537
Avon Park, Fla.

The summer fertilizer application has been in full swing for the month of May and will, by the time of this publication, be almost completed. The trees are in good condition and the fruit is growing well. However, by May 17 it has begun to be real hot and we are without any showers of rain. Should this continue a few days there could be a change in conditions. It has been necessary by May 17th to start irrigation plants and may I suggest that we do not let the tree go into a wilt before starting. With the heavy bloom and setting of fruit we need to keep the moisture up.

Valencia orange movements continue rather briskly but will soon reach the end of another season. And we will soon be thinking of the first shipment of a new season.

The vegetable deal which was off to a slow start has seen a good month of marketing tomatoes and cukes. Melons are about ready but are very late.

WEST HILLSBOROUGH, PASCO AND PINELLAS COUNTIES

J. W. Boulware
Phone WEbster 8-2638
Tampa, Fla.

In general our trees remain in excellent condition in spite of some dry weather. However, with the drying of the soil, additional root damage due to last season's excessive moisture, continues to appear.

Because of heavy rains in March we are recommending the summer application of fertilizer a little earlier than usual. It is hoped that all groves will be fertilized by the end of June. This will not only compensate for the earlier leaching, but should give the fertilizer a chance to act gradually before summer rains become too heavy.

Be prepared to use your summer oil and Zineb between June 15 and July 15 as this is the recommended time for this spray.

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Uncle Bill Says:

Well, it's all over . . . the election, we mean, and while the results could not possibly please everyone, the winners have been named by the voters of this state, and we wish each of them the most successful administration, and hope that the majority which placed them in office will profit by the promises of each candidate . . . fulfillment of which means that the state of Florida will receive competent and conscientious service.

Most everything points to a continuation of the successful seasons we've had the last couple of years . . . our growers organizations and the various state organizations which are keepin' in constant contact with the most successful means of promoting growth, and conductin' constant research programs in which they seek to find improvements over present methods . . . studies is bein' made to improve marketing methods and a constant study is bein' maintained of every possible market, both domestic and foreign, in order that our constantly growing production may be sold to the very best advantage.

Of course, weather and pests still continue to be hazards which will plague us from time to time, but compared to the problems which face folks in other lines of business we believe that the citrus grower who keeps fully abreast of the times is in one of the best businesses they is today.

As a constant customer of the Lyons Fertilizer Company since it first started in business we find an increasing satisfaction with each passin' year in our assocation with this fine company and we're more and more sold on the company's slogan that Lyons Fertilizers Produce Maximum Crops of Finest Quality.

GROWERS & SHIPPERS LEAGUE TO HOLD ANNUAL MEETING IN ORLANDO, JUNE 14th

The Growers and Shippers League of Florida will hold its 37th annual meeting in Orlando on June 14, Gordon C. Stedman, executive vice president, announced today.

"J. J. Parrish, president of the league, has issued the call for the annual gathering of growers and shippers," he said, "and the San Juan hotel will be our headquarters."

The Growers and Shippers League is the official representative for the Florida Citrus Commission, Florida Canners Association, Florida Citrus Mutual, Citrus Processors Association and the Florida Express Fruit Shippers Association in traffic-transportation business. The league is a non-profit organization.

INDUSTRY CONTROL PROGRAMS FOR GRAPEFRUIT

(Continued from page 23)

possible in practice in the framework of our present economic system. For instance, the demand of high income consumers for fresh grapefruit may be distinctively different from the demand of low income consumers. If it were possible to do so, it might pay to discriminate between the two groups and charge high income consumers a high price and low income consumers a low price. Obviously, this cannot be done. The industry does not control retail grocers and, if it could, retail grocers cannot show prejudice among their customers. They must charge the same price to all customers of a particular store.

(Concluded Next Issue)

Advertising In
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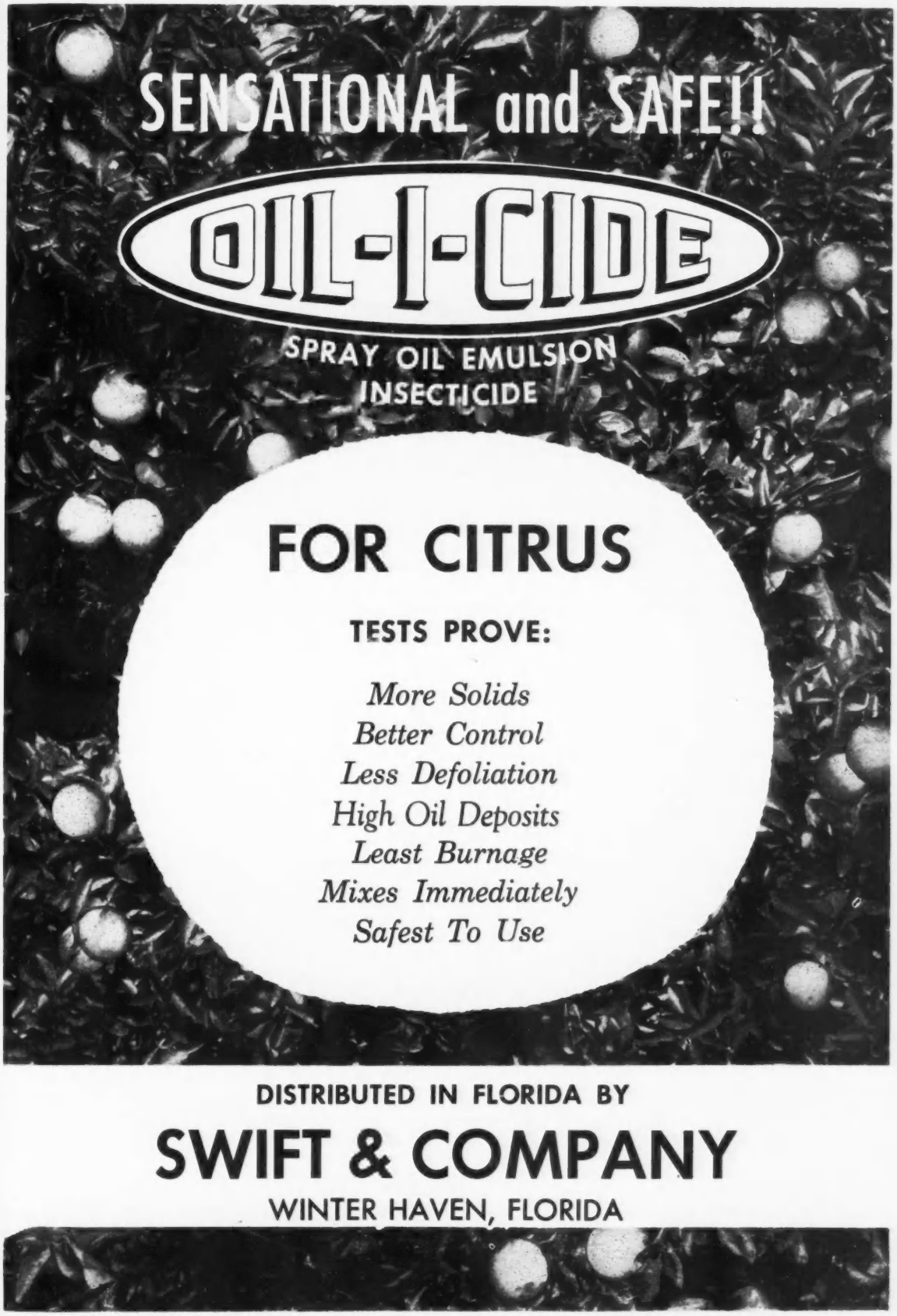

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